

though not quite the sharpness, of cut glass, for which, however, they are frequently mistaken. An elegant glass pillar was also manufactured in the prince's presence with great rapidity, the perfectness of the article depending altogether on the skill of the workman.

The royal visitor was next conducted to the mixing-room, where the glass is prepared for the furnace, and was afterwards ushered into a long room where a number of workmen were busily engaged at glass-cutting, the machinery being turned by steam. In this shop a variety of articles is glass, of every shape and design, were in various stages of completion, the busy operations of the workmen, and the din of wheels and machinery, presenting a scene of active life and industry. His royal highness then passed on through the show-rooms of the establishment, at the splendid display of which he expressed his admiration, and departed amidst the hearty cheers of the workmen. There are nearly 500 hands employed in these works, in which about 12,000 lbs. of glass of every description are produced weekly.

## 2.—The Rolling Mills of Messrs. Muntz in Water-street.

Here his royal highness was received by Phillip Henry Muntz, Esq., one of the proprietors, and conducted through the different departments of the mill where the various operations of manufacturing the patent yellow metal were being carried on. He was first shown the metal in its liquid state taken from the furnace, and cast in bars or pipes; next the process of heating the solid mass, which, while in this state, was subjected to the operation of powerful rollers, turned by not less powerful steam machinery. The flattened bar, after being taken from the rollers, was again subjected to the heat of the furnace, and once more passed under the rollers, and in this way, by four operations, the shapeless mass was converted into a fine sheet of metal, cut by circular shears into the required lengths, and prepared for use in the "wooden walls" of Old England, for which it is found peculiarly fitted, and is fast superseding in the British navy and our mercantile marine the more expensive process of copper-sheating.

## 3.—The Papier Maché Establishment of Messrs. Bettridge, Jennings, and Son, Constitution Hill.

Here his royal highness was received by the Messrs. Bettridge, Jennings, and Son, and ushered by them through their extensive works. He was then shown the various stages of this beautiful manufacture, from the first process of pasting the sheets of paper together in the form of trays, &c., till the article was turned out in its polished and highly finished state. Prince Albert seemed much interested in the beautiful arts of enamelling, inlaying with pearl, and painting, which are carried on in separate rooms, and he examined with much apparent gratification the many beautiful designs and views which were being transferred from the works of Landseer, Roberts, and other artists, to the more costly and highly-ornamented articles intended for the drawing-room and boudoir. After examining the process of turning door-handles, vases, &c., on lathes, his royal highness was conducted to the show-rooms, where he appeared to be highly delighted with the magnificent and elegant collection of articles in papier maché which were here displayed in the highest state of finish. Many of the larger articles were embellished with historical subjects, others with allegorical groups, and the smaller ones were tastefully painted with birds, flowers, views, and portraits. The prince seemed to be equally surprised and delighted at the great variety of purposes to which the manufacture was applied, the room containing specimens in every shape, including work-tables, chairs, folding screens, cabinets, work-boxes, desks, picture-frames, &c.

## 4.—The Gun and Sword-blade Manufacture of Messrs. Sargent, in Charlotte-street

Where the new process of rolling gun-barrels, and turning and boring them, by steam-machinery is very extensively carried on. The highly-finished and perfect style with which the barrel was turned out excited the admiration of the prince, who examined, with the judgment of a connoisseur and the eye of a keen sportsman, the smooth and glassy surface

of a variety of guns which have just been completed by Messrs. Sargent for the Ordnance department, by order of government. By the aid of their very extensive and complete machinery the proprietors are enabled to manufacture about a thousand guns, of various descriptions, per week.

## 5.—The Electro Plating Establishment of Messrs. Elkington, Mason and Co.

This, the most important to our view in its bearing upon building art, this new and beautiful invention is here carried on most extensively, the perfection in which it is brought having superseded to a great extent the old system of gold and silver plating. At this establishment are also manufactured solid gold and silver articles, deposited by the same agency as is used in the process of plating the solid articles, merely requiring a longer period for the process of deposition. Large quantities of rings, bracelets, and other light ornaments were placed in a small basket, and dipped in a solution of gold, and in less than five minutes they were brought out perfectly and beautifully gilt. The whole of the articles intended for plating are manufactured of German silver, those intended for gilding being composed of a mixed metal, formed chiefly of a mixture of brass. One of the most recent applications of this beautiful art is the coating of flowers, leaves, and rare plants with gold, silver, or copper; birds, too, are subjected to the same process of enamelling, and form exquisite specimens for cabinets and other collections. The intention, amongst the infinite variety of purposes to which it is being applied, has also been used in coating with copper cloth and canvas, as sheathing or covering for buildings; and by the same process wrought-iron can be coated with zinc, so as to prevent the injury arising from oxidation. His royal highness expressed himself greatly pleased and interested in the various processes of this new and beautiful art, in the carrying out and perfecting of which Birmingham claims the exclusive distinction.

## 6.—The Gilt and Silver Plated Button Manufacture of Mr. Edward Armfield, New Hall-street.

This was the last of these establishments visited by his royal highness, who was received by Mr. Armfield, on alighting from his carriage, and conducted through the different workshops in which the various processes of manufacture were carried on. The prince first inspected the metal as it is cut out in its rough by powerful presses; next the process of annealing, cleansing, and stamping; and the simple mode by which the shank is soldered on was afterwards explained. The process of gilding and burnishing was next gone through in the presence of his royal highness, thus giving the last finish to this once fashionable article of utility and ornament. This, the once great staple trade of Birmingham, is now reduced to a very limited extent, and of the thousands who were in years past kept busily and profitably engaged in the various branches of the manufacture, few, comparatively, are now obtaining employment. The gilt and plated metal button trade has, perhaps, called into existence and exercised a greater amount of inventive genius than the manufacture of any similar article in Birmingham; it is still undergoing constant improvements. One of the latest for which a patent has been obtained, is what may be termed a moreable button, the shank being attached to the coat, to which can be firmly put on any pattern of button which the taste of the wearer may suggest, and this he can change as often as it suits his pleasure. This patent, we learn, applicable to covered as well as metal buttons. It is not to be supposed that the button manufacture in Birmingham is confined to the latter alone, for the making of silk and Florentine buttons is carried on very extensively, and the button trade may be still said to form our staple manufacture, inasmuch as it employs more hands than any other branch of industry in our far-famed "toy-shop." The fortunes of many of our most wealthy merchants have been based on the button trade, as it flourished in the palm days, when its importance was so highly estimated as to secure the passing of a legislative enactment in its favour (we believe in the reign of George the third) subjecting to a heavy fine all persons found wearing other than metal buttons!

## The Town Hall.

Great preparations had been made here to receive his royal highness by an assembly of upwards of 1,500 ladies, who had gathered in this magnificent hall, and through the influence they had been able to bring to bear, succeeded in diverting him from his first purpose of merely inspecting the exterior of the building. Their attraction was irresistible. His royal highness remained for a quarter of an hour, and was greeted most enthusiastically by them, and by the aldermen, the members of the council, and the immense assemblage of other gentlemen who made up the dense crowd of several thousands with which the hall was crammed. He was greeted also by the unequalled strains of the *mouder organ*, played by Mr. Simpson, with the power and flexibility of which, and with the noble proportions of the hall, his royal highness exceeded himself as being highly gratified.

## 8.—The Free Grammar School.

This highly reputed work of Mr. Barry's, which, with the hall, the work of Mr. Hancock, are regarded as the "Lion" structures of Birmingham, was the last object of his royal highness's visit, and occupied a fair share of his attention. Both these buildings will, one day, shortly be fully set forth and detailed in our pages, so that further remark is uncalled for now. His royal highness departed after a stay of five or six hours, greatly pleased with his visit and the reception he experienced. We hope this is but the beginning of his profitable acquaintance with Birmingham, its arts, and its people.

## BIOGRAPHICAL SKETCHES OF DISTINGUISHED ENGINEERS.

(Continued from page 503.)

A RECOMMENDATION so much to the purpose decided the proprietors of the Eddystone in their choice of an engineer and builder. We have before us the original agreement drawn up upon this occasion, and deputed to Mr. Smeaton powers of the most ample kind. This document, conferring the entire control of a great undertaking, involving an unusually large expenditure, is simple in its wording, and seems to have been entered into spontaneously, without the intervention of lawyers; neither are there any signatures of witnesses; the parties interested felt that they had found the right man, and were anxious only to give to him the entirety of their confidence. The clauses are eight in number, and confined chiefly to a declaration of the supremacy of the engineer in the different departments subsidiary to such a work; as an example of the whole tenour of the instrument, we transcribe the last clause, which is to the following effect:—"That Mr. Smeaton have the sole power, and management, and direction, of all persons employed in the service, and may discharge, or reward, such as he sees proper; and also control all matters whater, and do such acts as he thinks will most and best conduce to the speedy and proper execution of this great and useful work." Many years after the successful completion of the Eddystone lighthouse, and when he had had leisure to condense a detailed history of his labours, given to the world in a splendid folio, he says, referring to the perfect understanding that subsisted between himself and the principals in the undertaking, "On this occasion I found myself totally unfettered; and perhaps on resolution of the proprietors ever more conducted to the ultimate success of the work than this, which set me at liberty. Had they been of the same temper and disposition of by far the greater part of those who have employed me, their language would have been, 'Get on for God's sake!' the public is in expectation; get on something speedily to show, by which we may gain credit with the public! This, however, was not their tone, which I looked upon as a happy omen."

The Eddystone Rocks obtained their name from the great variety of contrary acts of the tides and currents in their vicinity. They are situated nearly south south-west from the port of Plymouth, distant from it about fourteen miles, and almost in the line which joins the *Sart and Lizard Points*; consequently, in the direction of vessels coasting up and down the Channel. Their situation with regard to the Bay of Biscay and the Atlantic is such,